34. The method of claim 33, wherein said endonuclease recognition site is selected from the group consisting of Class I I-endonuclease sites, Class II I-endonuclease sites, Class III I-endonuclease sites, Class IV I-endonuclease sites, and Class V I-endonuclease sites.

35. The method of claim 34, wherein said endonuclease recognition site is a Class I I-endonuclease site.

36. The method of claim 35, wherein said endonuclease recognition site is selected from the group consisting of I-*Sce*I, I-*Sce*IV, I-*Csm*I, and I-*Pan*I sites.

37. The method of claim 36, wherein said endonuclease recognition site is an I-*Sce*I site. --

REMARKS

Entry and consideration of this amendment is respectfully requested.

Claims 1-26 have been canceled. New claims 27-37 find support throughout the specification, for example on pages 20-21 and Fig.6. Accordingly, no new matter is entered by amendment.

Applicants submit herewith a Sequence Listing and have amended the specification to conform with the requirements of 37 C.F.R. §§ 1.821-1.825.

Applicants request the use of the computer-readable form of the Sequence Listing in U.S. Application Serial No. 08/417,226, filed April 5, 1995, now U.S. Patent No. 5,962,327, issued October 5, 1999.

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I hereby state that the contents of the paper copy of the Sequence Listing in this application and the computer-readable form of the Sequence Listing in U.S. Application Serial No. 08/417,226, filed April 5, 1995, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "**Version with Markings to Show Changes Made**."

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: April 18, 2001

By: _____

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Version with Markings to Show Changes Made

In the Specification:

The paragraph beginning on line 4 of page 5 has been amended as follows:

Accordingly, this invention aids in fulfilling these needs in the art. Specifically, this invention relates to an isolated DNA encoding the enzyme I-*Sce*I. The DNA has the following nucleotide sequence:

```
                                        ATG CAT ATG AAA AAC ATC AAA AAA AAC CAG GTA ATG 2670
                                        M   H   M   K   N   I   K   K   N   Q   V   M   12

2671 AAC CTC GGT CCG AAC TCT AAA CTG CTG AAA GAA TAC AAA TCC CAG CTG ATC GAA CTG AAC 2730
  13 N   L   G   P   N   S   K   L   L   K   E   Y   K   S   Q   L   I   E   L   N   32

2731 ATC GAA CAG TTC GAA GCA GGT ATC GGT CTG ATC CTG GGT GAT GCT TAC ATC CGT TCT CGT 2790
  33 I   E   Q   F   E   A   G   I   G   L   I   L   G   D   A   Y   I   R   S   R   52

2791 GAT GAA GGT AAA ACC TAC TGT ATG CAG TTC GAG TGG AAA AAC AAA GCA TAC ATG GAC CAC 2850
  53 D   E   G   K   T   Y   C   M   Q   F   E   W   K   N   K   A   Y   M   D   H   72

2851 GTA TGT CTG CTG TAC GAT CAG TGG GTA CTG TCC CCG CCG CAC AAA AAA GAA CGT GTT AAC 2910
  73 V   C   L   L   Y   D   Q   W   V   L   S   P   P   H   K   K   E   R   V   N   92

2911 CAC CTG GGT AAC CTG GTA ATC ACC TGG GGC GCC CAG ACT TTC AAA CAC CAA GCT TTC AAC 2770
  93 H   L   G   N   L   V   I   T   W   G   A   Q   T   F   K   H   Q   A   F   N   112

2971 AAA CTG GCT AAC CTG TTC ATC GTT AAC AAC AAA AAA ACC ATC CCG AAC AAC CTG GTT GAA 3030
 113 K   L   A   N   L   F   I   V   N   N   K   K   T   I   P   N   N   L   V   E   132

3031 AAC TAC CTG ACC CCG ATG TCT CTG GCA TAC TGG TTC ATG GAT GAT GGT GGT AAA TGG GAT 3090
 133 N   Y   L   T   P   M   S   L   A   Y   W   F   M   D   D   G   G   K   W   D   152

3091 TAC AAC AAA AAC TCT ACC AAC AAA TCG ATC GTA CTG AAC ACC CAG TCT TTC ACT TTC GAA 3150
 153 Y   N   K   N   S   T   N   K   S   I   V   L   N   T   Q   S   F   T   F   E   172

3151 GAA GTA GAA TAC CTG GTT AAG GGT CTG CGT AAC AAA TTC CAA CTG AAC TGT TAC GTA AAA 3210
 173 E   V   E   Y   L   V   K   G   L   R   N   K   F   Q   L   N   C   Y   V   K   192

3211 ATC AAC AAA AAC AAA CCG ATC ATC TAC ATC GAT TCT ATG TCT TAC CTG ATC TTC TAC AAC 3270
 193 I   N   K   N   K   P   I   I   Y   I   D   S   M   S   Y   L   I   F   Y   N   212

3271 CTG ATC AAA CCG TAC CTG ATC CCG CAG ATG ATG TAC AAA CTG CCG AAC ACT ATC TCC TCC 3330
 213 L   I   K   P   Y   L   I   P   Q   M   M   Y   K   L   P   N   T   I   S   S   232

3331 GAA ACT TTC CTG AAA TAA  (SEQ ID NO:1)
 233 E   T   F   L   K   *    (SEQ ID NO:2).
```

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On page 7 beginning at line 2, paragraphs 1-11 have been amended as follows:

This invention will be more fully described with reference to the drawings in which:

Fig. 1 depicts the universal code equivalent of the mitochondrial I-*Sce*I gene (SEQ ID NO:1).

Fig. 2 depicts the nucleotide sequence of the invention encoding the enzyme I-*Sce*I and the amino acid sequence of the natural I-*Sce*I enzyme (SEQ ID NOS: 5 and 2).

Fig. 3 depicts the I-*Sce*I recognition sequence and indicates the possible base mutations in the recognition site and the effect of such mutations on stringency of recognition (SEQ ID NOS: 6, 7, and 8).

Fig. 4 is the nucleotide sequence and deduced amino acid sequence of a region of plasmid pSCM525. The nucleotide sequence of the invention encoding the enzyme I-*Sce*I is enclosed in the box (SEQ ID NOS: 9 through 16).

Fig. 5 depicts variations around the amino acid sequence of the enzyme I-*Sce*I (SEQ ID NO: 2).

Fig. 6 shows Group I intron encoding endonucleases and related endonucleases (SEQ ID NOS: 17-44).

Fig. 7 depicts yeast expression vectors containing the synthetic gene for I-SceI.

Fig. 8 depicts the mammalian expression vector PRSV I-*Sce*I.

Fig. 9 is a restriction map of the plasmid pAF100. (See also YEAST, 6:521-534, 1990, which is relied upon and incorporated by reference herein).

Figs. 10A and 10B show the nucleotide sequence and restriction sites of regions of the plasmid pAF100 (SEQ ID NOS: 45-50).

On page 12, the last paragraph has been amended as follows:

The enzyme I-*Sce*I has a known recognition site. (ref. 14.) The recognition site of I-*Sce*I is a non-symmetrical sequence that extends over 18 bp as determined by systematic mutational analysis. The sequence reads: (arrows indicate cuts)

```
                      ↓
5'   TAGGGATAACAGGGTAAT   3' (SEQ ID NO:51)
3'   ATCCCTATTGTCCCATTA   5' (SEQ ID NO:52).
                  ↑
```

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B

On pages 41 to 42, the bridging paragraph has been amended as follows:

-e- The supernatant of this clone was used to infect other mouse cells (1009) by spreading 10^5 virus particles on 10^5 cells in DMEM medium with 10% fetal calf serum and 5 mg/ml of "[polybrain] polybrene (hexadimethrine bromide)". Medium was replaced 6 hours after infection by the same fresh medium.